DOCUMENT RESUME

ED 039 171 SP 003 836

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TITLE Multidimensionality: A Technique for Studying the Classroom.
PUB DATE 70
NOTE 15p.; Paper presented at annual meeting, AERA, Minneapolis, 1970

EDRS PRICE EDRS Price MF-$0.25 HC-$0.85
DESCRIPTORS *Behavioral Objectives, *Classroom Observation Techniques, Evaluation Techniques, *Student Behavior, *Teacher Behavior, Teacher Evaluation, *Teacher Influence, Teacher Supervision, Team Teaching
IDENTIFIERS *Florida Taxonomy of Cognitive Behavior, Reciprocal Category System, Teacher Practices Observation Record

ABSTRACT

This report discusses the development and implementation of a program for simultaneous use of three classroom observation systems which measure different dimensions of student behavior. The three observation systems are the Teacher Practices Observation Record, whose basis is the education of students in the process of reflective thinking; the Reciprocal Category System, which measures behavior along the humanistic dimension; and the Florida Taxonomy of Cognitive Behavior, founded on the view of education as the acquisition of knowledge. A research project measured attitudes toward these behavior categories in a group of 109 public school teachers and concluded that none of the attitudes were necessarily interrelated. Thus the need for several types of observation systems was derived and an attempt was made to train teachers in the use of the three different systems and in the formulation of specific behavioral objectives. Other aspects of the program include the development of a system of peer supervision for student teachers in team teaching arrangements and the development of evaluation instruments which measure the effect of teacher behavior on student behavior. (SP 003 835 is a related document) (RT)

ED039171

APR 8 1970

MULTIDIMENSIONALITY: A TECHNIQUE FOR STUDYING THE CLASSROOM

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1970

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Paper read at the annual meeting of the American Educational Research Association Symposium on "Multidimensionality and Systematic Observation as They Relate to Teacher Preparation; Theory and Implication," Minneapolis, Minnesota, March 5, 1970.

SP003836

Multidimensionality: A Technique for Studying the Classroom

Introduction

A given observational system structures and disciplines the analysis of teaching along some necessarily limited dimension; otherwise it would not be systematic. It is not possible to develop an instrument which looks at all important dimensions of the classroom at one time or in a single score. Thus, we must use a plurality of instruments based on different and differing viewpoints in order to analyze the teaching-learning process adequately and fairly. In addition, our pioneer efforts in the simultaneous use of three diverse observational systems indicate this technique makes possible a depth of analysis of teaching never before thought possible (Wood 1968, Bane 1969, Brown and Webb 1970).

Pluralism

A pluralistic or multidimensional viewpoint has underpinned numerous workshops we have conducted in five Florida counties over the past two year. Three observational systems which have been frequently used are the Teacher Practices Observation Record (TPOR), a system developed by Brown (1968) based on John Dewey's philosophy of experimentalism or reflective thinking; The Reciprocal Category System (RCS), a greatly modified and extended version of Flanders' method of verbal interaction analysis, developed by Ober, et al. (1968); and the Florida Taxonomy of Cognitive Behavior (FTCB) a system developed by Brown, Soar, Ober, and Webb based on the theory of the cognitive domain originally formulated by Bloom and modified by Sanders (1966).

Each observational system reflects a basic philosophical viewpoint that currently influences American education. The TPOR measures classroom behavior along the Pragmatic or experimental dimension which views the major purpose of education as that of education students in the process of reflective thinking. The RCS measures behavior along the Humanistic dimension which views the major aim of education as the development of adequate, well adjusted human beings who are acceptant of themselves and others. The FTCB measures behavior along the dimension of Essentialism which holds that the main purpose of education is the acquisition of knowledge. Our view has been that each position has something of value to say for education and consequently we have settled on a pluralistic approach to the study and improvement of teaching.

Research Findings

During the course of our inservice training programs conducted for the purpose of enabling teachers to systematically observe and appraise their own behavior, we were asked several practical questions by Florida administrators which, at one time, challenged our case for multidimensional approaches to studying and improving teaching. Questions such as the following were asked: How are you sure that we need to teach several systems? Why is it not possible that a teacher who studies only interaction analysis will also become more experimental and also engage her children in complex cognitive behavior? In other words, maybe the three dimensions we were teaching were so related in practice that teachers need not spend the extra time required to learn three systems when one might do it all. Additional questions stemming from the monetary and logistical concerns of Florida administrators were: How can we identify

those teachers who might best profit from training in a particular system or possibly two systems rather than all three? Do elementary teachers differ significantly from secondary teachers on measures of Experimental, cognitive, and affective or Humanistic behavior so that training might be differentiated? Do experienced teachers differ from beginning teachers?

In order to answer these questions Bane (1969) conducted a study in a Northeast Florida county of 109 teachers representing grades 1-12 and ten subject areas. Teams of three observers each simultaneously observed the same sample of a teacher's behavior with each observer using a different one of the three observational systems described above. By focusing on the same sample of behavior from three theoretically diverse viewpoints, the study sought to determine the extent of the relationships between the dimensions. Along with these process measures data related to various teacher characteristics or presage variables were obtained for each teacher including: age, sex, race, grade level taught, subject matter taught, and experience. In addition, three pencil and paper inventories were completed by each teacher. The Personal Beliefs Inventory (PBI) and Teacher Practices Inventory (TPI) measure fundamental philosophical beliefs and educational beliefs respectively which are in agreement with Dewey's philosophy of experimentalism. These two belief instruments were developed by Brown (1968) to be used in conjunction with the Teacher Practices Observation Record, also based on Dewey's philosophy, as a means of studying relationships between theory and practice. The third belief instrument used was Rokeach's Dogmatism Scale, Form E, which is designed to measure

the rigidity-flexibility of an individual's belief-disbelief system.

Relationships between the numerous variables were explored through Pearson product-moment correlations, analysis of variance, and multiple regression analysis. Of the three process measures of teacher behavior only an affective variable extracted from the Reciprocal Category System of interaction analysis and cognitive behavior as measured by the FTCB were related in a statistically significant manner, r= .34, significant beyond the .05 level. There was a tendency for teachers who behave frequently at complex cognitive levels to also be warmer, more encouraging, more acceptant, and more concerned with student contributions than teachers who behave only at relatively simple cognitive levels.

While no significant relationships were found between educational beliefs or the dogmatism scale and teacher behavior, statistically significant relationships between fundamental philosophical beliefs and experimental and cognitive behavior were found. As teachers' beliefs came into greater agreement with Dewey at the fundamental level, their practices were found to be more experimental and more cognitively complex.

Insignificant relationships were found between teacher behavior and race, age, and experience. For sex, however, a significant relationship was found indicating that male teachers used greater amounts of warming, accepting, and amplifying behaviors in comparison to directing, correcting, and scolding behaviors than was true for female teachers.

Contrary to what might have been expected, differences in teacher behavior across grade levels failed to be significant. Elementary teachers

were not found to dominate experimental practices nor were high school teachers ahead of their elementary and junior high counterparts in the use of complex cognitive behavior.

One of the more interesting findings of the study was the number of significant relationships discovered between subject matter taught and teacher behavior. Social studies teachers were significantly less experimental, yet significantly more positive on the affective measure than all other groups. Science teachers also scored low on the experimental dimension, a surprising finding in that laboratory experiences, when evident, fare well from an experimental frame of reference. Science teachers were the lowest on the cognitive measure while math teachers were the highest. Language arts teachers did not stand out from the other groups of teachers on any of the measures. Of overall importance is that while there were statistically significant differences on the process measures none of the subject matter area groups scored particularly well on the experimental and cognitive measures.

On the basis of this study it was concluded that the value of the three observational systems for studying and improving teaching was enhanced by the finding that the instruments do not measure the same thing, or rather the things they measure are not necessary concomitants of one another. The experimental teacher may or may not exhibit complex cognitive behavior and the teacher who engages in complex cognitive behavior may or may not follow experimental practices. Although a statistically significant relationship was found between complex cognitive behavior and positive affective behavior, the

relationship was not of such magnitude that one instrument should substitute for the other.

It was further concluded that selection of teachers by subject matter taught or other characteristics for training in the use of one or two of our observational systems to the exclusion of the others was undesirable. Trends were identified between certain teacher characteristics and observed behavior, particularly for teachers of different subject matter, but as previously mentioned none of the groups scored exceptionally well on the measures.

The general conclusion of the study which affirms our present position is that a plurality of theory and instrumentation for the study and improvement of teaching is warranted. The great number of interrelationships identified in the study suggests that teaching is far too complex a process to be studied from a single all-embracing theoretical framework. Far greater insight into teaching is attained when a number of theoretically diverse observational systems are employed than would be true otherwise.

Current Uses of the Multidimensional Approach to Studying and Improving Teaching.

In Florida, we are currently attacking many areas within the educational process from a multidimensional or pluralistic approach. We have made some mistakes, gained some insights, and begun what we believe are some innovative approaches to improving curriculum and instruction. Our efforts will be discussed under the headings of: (1) training, (2) behavioral objectives, (3) peer supervision and (4) evaluating instructional programs.

1. Training. Success in the use of observational systems for measuring classroom behavior depends largely on the ability to train large numbers of people to use them easily and painlessly with a maximum of reliability and validity. At Florida we have developed a series of training films for four different observational systems. Soon we hope to have training workbooks to accompany these films so that training in the use of the systems can be accomplished independent of the handful of expensive experts in these systems.

The Florida group has experience in training thousands in the use of their observational systems. Key administrators and teachers in five Florida counties have been trained in three or more systems. Hundreds of teachers and parent educators in Follow Through and Head Start programs in eleven cities across the nation have been trained in the use of four different systems. Many of the parent educators in this group have less than a high school education.

Contrary to what one might suspect, teachers are able and willing to learn several different systems much better than a single system. Training in several diverse systems seems to reduce apprehension and hostility aroused when too much emphasis is placed on the limited view of the classroom provided by any given single system. For the same reason, it is important that more than one philosophy or viewpoint with respect to the purposes of education be represented by the several instruments selected. Once a first observational system is learned, subsequent systems come easy, and serve to compliment one another.

A mistake we made in our early training efforts was based on the assumption that once teachers learned to systematically observe, classify, and record specific variables in the classroom, they would be able to automatically incorporate desirable behaviors into their instructional plans and strategies. Feedback received from teachers simply did not bear out our assumption. The feedback sounded something like, "Now that I've learned to recognize these behaviors what do I do with them?"

Confronted with this situation we have begun differentiating the nature of our training sessions depending on the purposes of the trainees. For research purposes we are continuing to stress observation emphasizing reliability and validity. In one study currently underway we are using some of our new training materials seeking to achieve between-observer reliability in excess of .80 with only three hours of training with the Reciprocal Category System.

Where the purpose has not been to train researchers but rather to help teachers with self-improvement, the emphasis on observation per se is being reduced and more attention is being given to the process of creating or "triggering" behaviors found on the various systems. By not requiring teachers to learn observational skills at a level of competency demanded for research purposes we find more time available to deal with behaviors from a multitude of systems.

In a sense, various observational systems comprise a bank of behaviors from which teachers may select in an eclectic fashion when formulating their instructional plans and strategies. Perhaps it will

be of interest to illustrate the process of creating a lesson to "trigger" a particular item on an observational system, a process which has become an integral part of our training sessions for non-researchers. One of the writers and a colleague were returning from a day of observing kindergarten classes in a northeast Florida county. They were discussing the fact that they had seen little, if any, cognitive behavior above level two, translation, on the Florida Taxonomy of Cognitive Behavior. It was suggested that they take some item from a relatively complex level of the taxonomy and see if they could come up with a lesson appropriate for a kindergarten classroom. Item 37, "points out unstated assumption," was selected for which they began to kick around some ideas. What might a kindergarten child say or do that would reflect an unstated assumption? How could the child be led to point out his assumption? After thirty minutes or so of playing around with some ideas they hit upon the relationship between age and size. What if the teacher were to select a small child who was six and a large child who was five, ask them to stand, and then ask the other children which of the two children standing was the oldest? Would the children disagree among themselves as to who was the oldest? What would happen when the children were made aware of the fact that the older child was indeed the smaller of the two children? Would the children who had incorrectly guessed who was the oldest child point out their assumption to the effect--the bigger the older? Would they see their error? If so, item 42, "detects error in thinking " would be triggered also. Hopefully, this story conveys some of the excitement which is generated in training sessions when processes similar to the one

above are used to help teachers formulate instructional strategies based on observational systems.

2. Behavioral Objectives. The movement across the country toward the statement of objectives in specific behavioral terms is being sanctioned in Florida by the State Department of Education. Among the 1969-70 proposed accreditation standards which public schools throughout Florida will have to eventually meet in order to be certified are a group of standards designated as product standards. These standards refer to learning outcomes in which students or percentages of students are required to demonstrate, describe, analyze, compare, list, contrast, respond, combine, identify, show, etc. The content of the product standards is usually of a general nature and the behavior required of the learner is usually stated in such a manner as to leave several alternative procedures open to the teacher. Stated as they are the product standards are applicable and relevant to more than one grade level and subject area.

Helping teachers formulate specific behavioral objectives suitable for their grade level and subject area which comply with the standards has been the focus of several recent inservice workshops. In these workshops we have begun using observational systems as structured short-cuts to the establishment of behaviorally stated objectives. The items or categories of most systems are nothing more or less than behavioral (observable) objectives or frameworks on which highly specific content can be easily attached.

Using an observational system such as the Florida Taxonomy of Cognitive Behavior or the Florida Taxonomy of Affective Behavior developed by Kaplan (1968) provides a check on the variety of intellectual and affective behaviors being incorporated into the objectives. This is important for our experiences indicate that many teachers tend to write cognitive objectives at only the simplest level, memory.

3. Peer Supervision. Still in an infancy stage of development is the concept of supervision which is called peer supervision. The process shows promise as a tool for both pre and inservice teachers in helping one another to improve their instruction. The process is particularly suitable for team teaching arrangements. Michalak (1969) outlines the five features of peer supervision as follows:

PEER SUPERVISION

1. PLANNING

* Peer (student teacher) teaching lesson shares plan with team members
* Tasks are assigned to each peer such as:
  recording verbal behavior of teacher (perhaps questioning)
  recording verbal behavior of pupils (responses to questions)
  recording data to see if objectives of lesson were met
* One or two peers may use systematic observation instruments to record during the Observation
* Group leader assists with planning tasks

2. OBSERVATION SESSION

* Observation may be viewed in classroom or from (VTR) Video Tape Recording
* Peer teaches lesson as planned
* Peers (observers) place themselves in strategic places in the classroom (this will not be required for VTR)

3. CRITIQUE PREPARATION

* Peer teaching lesson writes an analysis of own lesson away from the team
* Peers and group leader meet to organize and analyze data collected
* They decide upon means for presenting the information to the demonstration teacher in the most meaningful and supportive way

4. CRITIQUE AND STRATEGY DEVELOPMENT SESSION

* Peer that taught lesson may share self analysis of lesson
* Other peers report data they had observed and recorded
* Peers group leader and student teacher ask questions about data recorded, they help to clarify and make suggestions but must make contributions based from the data. This reporting, questioning and clarifying of the data gives the student teacher a greater understanding of the feedback provided
* After the feedback has been provided the student teacher, the entire team can make out a plan for future action

5. SUPERVISORY TEAM REVIEW, FUTURE PLANNING SESSION

* All participants review and assess the meeting and then plan ahead to make future meetings of the Peer Supervisory Process team run smoothly
* Selection of the next peer (student teacher) to teach will be made, when it will be held, where, and length of time

When initiating the peer supervision process with a group of teachers we have not stressed the use of observation systems. Rather, we have allowed participants to structure their own observations. After going through the process several times, teacher become aware of the limitations of their observations. Out of this awareness grows a need for ways of obtaining more accurate and relevant data from their observations. Once the need is created we find enthusiastic acceptance of observational systems as means of improving instruction.

4. Evaluating Instructional Programs. We believe one of the most promising developments in evaluation in many years is the use of observational systems as product measures as well as process measures. On our newer instruments each item is reciprocal. For each and every item we can indicate whether a teacher or pupil triggered that behavior. This tells us which teacher behavior begets what pupil behavior. In addition, the isolated pupil scores constitute an "instant achievement

test" (or product measure). If structured observations of pupil behavior are treated as if they were pupil responses on paper and pencil achievement tests, we have a new and exciting measure of teacher-program product. Not only does this overcome serious deficiencies in available tests, this new type of product measure can be directly related to the educational processes immediately surrounding its occurrence or lack of occurrence, as the case may be.

We also anticipate that a system like the Florida Taxonomy of Cognitive Behavior will become particularly useful as such a two-way, process-product measure. First of all it measures the intellectual level or level of knowledge being dealt with in the classroom. That, obviously, is a bread and butter factor in virtually any educational program--innovative or otherwise--which comes up for evaluation. Secondly, it is based upon a sound, widely acclaimed, and time-tested theory for thinking clearly about school objectives. Also, it is a reciprocal system, i.e., it differentiates pupil from teacher behavior on each and every item. Furthermore, it has been thoroughly field-tested as a guide to the development of specific instructional tasks at all grade levels, and training techniques have been developed which make it possible to use easily and inexpensively on a large scale. It is currently being tested as a means of evaluating seven diverse Follow Through program models (innovations) across the nation, and preliminary returns are very encouraging.

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